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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,789	11/24/2003	Kazunori Hagimoto	136034	1591
25944 7590 03/19/2008 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850				
EXAMINER				
WEISS, HOWARD				
ART UNIT		PAPER NUMBER		
2814				
MAIL DATE		DELIVERY MODE		
03/19/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/718,789

Applicant(s)

HAGIMOTO ET AL.

Examiner

Howard Weiss

Art Unit

2814

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 33-38 and 91-95 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 33-38 and 91-95 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S5108)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Attorney's Docket Number: SUG-176-USAP

Filing Date: 11/24/03

Continuing Data: RCE established 11/15/2006 and 1/28/2008

Claimed Foreign Priority Date: 11/28/2002, 12/25/2002, 1/31/2003, 8/29/2003

Applicant(s): Hagimoto et al. (Noto)

Examiner: Howard Weiss

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/28/2008 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
3. Claims 33 to 38 and 91 to 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasutimi et al. (JP 2001-339100), Carter-Coman et al. (U.S. Patent No. 6,222,207), Burt (U.S. Patent No. 4,574,470) and Murasato et al. (U.S. Patent No. 5,744,829).

Yasutimi et al. show most aspects of the instant invention (e.g. Figure 2) including:

- A compound semiconductor layer **4** including a light-emitting layer consisting of N-type AlGaInP cladding layer **41**, an AlGaInP active layer **42** and a P-type

AlGaInP cladding layer **43** and a light extraction surface **44** and sensitive to the wavelength ranges listed

- A silicon device substrate **2** bonded to said compound semiconductor layer
- A multilayered metal reflective layer **3** including an Au-based main metal layer **31** and an Ag-based **32** (i.e. Paragraph [0018] of user supplied translation) layer interposed between the Au-based layer and the compound semiconductor layer

Yasutimi et al. do not show a (Ag,Au)/Sb or (Ag,Au)/Sn substrate side metal contact layer and a silicon-diffusion-blocking layer of the composition claimed and the layers in the light-emitting layer to be explicitly composed of $(\text{Al}_x\text{Ga}_{1-x})_y\text{In}_{1-y}\text{P}$ where $0 \leq x \leq 1$ and $0 \leq y \leq 1$.

Carter-Coman et al. teach (e.g. Figures 2) that a metal reflective layer **34** can be either Au- or Ag-based (Column 5 Lines 25 to 30) therefore establishing their equivalence, a contact layer **32** and a silicon-diffusion-blocking layer **36** made of a conductive material with Ti or Ni as a major component (e.g. NiV) and a substrate side (Au,Ag)Sn layer **38** to produce an light emitting device with high reflectivity after subjected to high temperatures (Column 2 Lines 23 to 34). It would have been obvious to a person of ordinary skill in the art at the time of invention to make a silicon-diffusion-blocking layer and a substrate side (Ag,Au)Sn layer as taught by Carter-Coman et al. in the device of Yasutimi et al. to produce an light emitting device with high reflectivity after subjected to high temperatures.

Burt teaches (e.g. Column 6 Lines 41 to 47) that NiV inherently blocks silicon diffusion. The express, implicit, and inherent disclosures of a prior art reference may be relied upon in the rejection of claims under 35 U.S.C. 102 or 103. "The inherent teaching of prior art reference, a question of fact, arises both in the context of anticipation and obviousness." *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir.1995) (affirmed a 35 U.S.C. 103 rejection based in part on inherent

disclosure in one of the references). See also *In re Grasselli*, 713 F.2d 731, 739, 218 USPQ 769, 775 (Fed.Cir. 1983).

Murasato et al. teach (e.g. Figure 1 and Column 3 Lines 55 to 63 and Column) to use double hetero-structure $(\text{Al}_x\text{Ga}_{1-x})_y\text{In}_{1-y}\text{P}$ where $0 \leq x \leq 1$ and $0 \leq y \leq 1$ in cladding layers 5,7 and active layer 6 to provide a high brightness, low operating voltage and high reliability device (Column 2 Lines 65 to 67). It would have been obvious to a person of ordinary skill in the art at the time of invention to use double hetero-structure $(\text{Al}_x\text{Ga}_{1-x})_y\text{In}_{1-y}\text{P}$ where $0 \leq x \leq 1$ and $0 \leq y \leq 1$ in cladding layers and active layer as taught by Murasato et al. in the device of Yasutimi et al. to provide a high brightness, low operating voltage and high reliability device.

Response to Arguments

Applicant's arguments filed 4/6/2007 have been fully considered but they are not persuasive. In order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be recognized in the prior art, and cannot be based on applicant's disclosure or the mere fact that the components at issue are functional or mechanical equivalents. *In re Ruff*, 256 F.2d 590, 118 USPQ 340 (CCPA 1958). See MPEP 2144.06. Carter-Coman et al. teach equivalence of either Ag or Au-based metal/alloys in light-emitting devices. Additionally, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of invention. See Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*, 550 U.S. —, 82 USPQ2d 1385 (2007).

In view of these reasons and those set forth in the present office action, the rejections of the stated claims stand.

Conclusion

4. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866-217-9197** (toll-free).
5. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(571) 273-8300**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(571) 272-1720** and between the hours of 7:00 AM to 3:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via Howard.Weiss@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on **(571) 272-1705**.

Art Unit: 2814

7. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 257/ 96, 98, E33.068	thru 3/12/2008
Other Documentation: none	
Electronic Database(s): EAST	thru 3/12/2008

HW/hw
21 March 2008/Howard Weiss/
Primary Examiner
Art Unit 2814